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A FORK IN THE ROAD: A CONCEPTUAL MODEL OF ONLINE CONSUMER ITERATIVE SEARCH

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Abstract

Lower searching cost and access to large amounts of information on the Internet are making a consumer's search more iterative. Through a synthesis of literature from consumer behaviour and information science, we propose a process model of online consumer search in which a consumer may move forward in the process towards a final product selection, but also is likely to backtrack to an earlier stage to revise their search. Our process model steps through a consumer's need, search criteria, alternatives, evaluation, and final selection, including an option of iteration within the evaluation stage. Future research will fully investigate the entire process model, but in this paper we focus on the evaluation stage and the resulting search iteration. In the online context, as a consumer evaluates alternative products, the consumer is also engaged in a learning process where the consumer may identify the need to update the functional product attributes and/or the hedonic product attributes of the search criteria or alternatives, which leads to a new iteration of the search process. The product consumption goals of a consumer (i.e., prevention, promotion) are theorized to also influence the search process leading to iteration. Hypotheses and future research opportunities are outlined.

Keywords: *Information Search, Online Behaviour, Goal Orientation, Functional Attributes, Hedonic Attributes.*

1 Introduction

Consumers search for information in order to make better informed purchase decisions. They typically look for products with desired attributes as well as retailers offering favourable terms of purchase in an attempt to decide what, when, and from whom to purchase. Consumer search has been studied extensively in the consumer behaviour literature, in which 'search' is usually depicted as a step in the consumer purchase process: problem recognition, information search, evaluation of alternatives, choice, and purchase (e.g., Bettman 1979; Schmidt and Spreng 1996). Researchers have investigated consumer search behaviour in the online purchase context from a number of perspectives (e.g., Klein and Ford 2003). However, there is a lack of research that focuses on the process aspect of online consumer search. A particular dearth of knowledge surrounds how IT enables consumer search, facilitating greater ease in searching with its logical consequence of more search iterations.

Given expected continued growth of online sales (Mulpuru and Hult 2009), retaining customers and improving online marketing effectiveness will remain top priorities for online retailers. With greater ease of online search consumers can easily move to other retailers' sites at any stage of the consumer purchase process. A key challenge for online retailers is to convert a website visitor or an online searcher to a buyer. The effectiveness of retailers' efforts to improve conversion to a large extent depends on how well they understand customers' online search process and how it affects purchase behaviour. To provide actionable guidelines to online retailers and to help them design more effective marketing strategies and online interfaces, we propose that researchers open the black box of online consumer search and examine the process in greater detail. In this paper we first briefly survey the literature on consumer search in both conventional and online environments as well as the information sciences literature on individual information seeking behaviour. We then propose an iterative process model of consumer search in the online purchase context. Next we focus on the evaluation stage and the resulting search iteration by identifying the need to update functional product attributes and/or hedonic product attributes of the alternative evaluation as an antecedent of search iteration. In addition, we hypothesize that the product consumption goals of a consumer (i.e., prevention, promotion) influence the search process leading to further iteration.

2 Consumer Pre-Purchase Search

Conventional Offline Environment. Information search precedes consumer decision making in many purchase contexts (Bettman 1979; Punj and Staelin 1983; Schmidt and Spreng 1996). Given the rich body of research in the area of consumer behaviour in the conventional purchase context, the current consensus seems to be that idealized consumer decision process can be characterized into five steps: problem recognition, information search, evaluation of alternatives, choice, and purchase. However, researchers also recognize that not all consumer decisions involve extensive problem solving effort and, thus, some steps of the process may be skipped in certain contexts.

Online Environment. The Internet provides a near limitless information repository that is accessible from almost any location. It also enables tools that facilitate efficient and effective searching, organizing, and distributing of information. The Internet also exhibits greater interactivity than the conventional offline environment (Peterson and Merino 2003). Consumers often have access to filtering and sorting tools to narrow their selection based on entered evaluative criteria (e.g., Diehl 2005).

Scholars have examined how the Internet changed the costs and benefits associated with on-line consumer search. They generated the following main theses: 1) search costs are likely to decrease in electronic markets due to diminishing costs of data exchange and, as a result, 2) consumers will be better able to find offerings meeting their tastes (see e.g. Bakos 1997). In addition, researchers have also examined antecedents of online search such as individual characteristics, social influences,

situational factors, and online environment factors (Darley et al. 2010). A number of studies have focused on online tools, such as consumer feedback, recommendation agents, comparison tools, and information filtering tools, which were not present in the conventional offline environment (e.g., Huang et al. 2009). The dependent constructs in online consumer search literature often include extent of search (i.e., time and effort) (e.g., Huang et al. 2009, Öörni 2003), adoption of online information sources (e.g. Sen et al. 2006), size and/or quality of consideration set (e.g., Öörni 2003, Punj and Moore 2009), purchase decision (e.g., Huang et al. 2009), and online search satisfaction (e.g., Kuruzovich et al. 2008).

We argue that this stream of research tends to examine the impact of the online environment on search while treating consumer information search as a black box. An implicit assumption in the existing research is that consumer search becomes more efficient in the online environment; little research has provided any clear indication of the actual *mechanism*, besides speedier information transmission and access to more information, which would differentiate online consumer search from conventional search. Ratchford et al. (2003) propose that when studying online consumer search behaviour we should move beyond the technology-facilitated information access approach by re-examining the fundamental purpose of online information search by consumers. Rowley (2000) and Peterson and Merino (2003) also share a similar view that the entire concept of consumer information search behavior requires rethinking in the context of the Internet.

Previous work on online search rests largely on highly abstracted models of search, such as sequential and simultaneous search (see e.g. Whinston, Stahl et al. 1997). We want to look beyond these abstractions to learn how exactly the Internet has modified the consumer search process. Specifically, we attempt to look inside the black box of consumer search in the online purchase context and conceptualize *how* consumers search for information in greater detail which includes the prevalence of search iteration.

Information Seeking Models. In the information sciences discipline, researchers have proposed a number of information seeking and retrieval models (see Knight and Spink 2008 for a review of the models). Among these models, some have highlighted the iterative nature of the information seeking process. For example, Marchionini (1995) presents an online information seeking model that depicts information seeking as an interactive process with eight stages, namely information problem identification, problem definition and understanding, search source selection, query formulation, search execution, result examination, information extraction, as well as reflection. Reflection then may lead to iterating the seeking process starting from one of the prior stages. In other words, reflection of the information seeking result may enable the seeker to revise the search problem, update the understanding of the search problem, reformulate the query, or reselect the sources. Knight and Spink (2008) also posit that information retrieval is “a highly iterative process, with the activating mechanisms and intervening variables imposing themselves into the information retrieval process at any stage (Knight and Spink 2008, p. 231).

3 Iterative Model of Online Consumer Search Process

While the conventional consumer purchase process model does not mandate that all the steps should occur in consecutive order, it clearly subscribes to the traditional idea that information search is needed to learn about the product alternatives available on the market. In conventional markets information search often involves physical movement within a store or among stores. Hence, search for products tends to be limited because of the cost of physically moving within a store or moving from store to store. Forward movement is often costly and backward movement even more so, limiting the ability of consumers to iterate the process. In the online environment, moving backward in the search process becomes much more frictionless because of lower search cost and greater access to information. Online consumers can access a large number of product alternatives provided by multiple retailers with minimal effort. Building upon the models in consumer behaviour and information

seeking behaviour, we propose an iterative conceptual model of online consumer search process (figure 1).

Our proposed model in figure 1 depicts the consumer search process starting with the identification of a need. As the consumer gathers her requirements, she develops a set of search criteria. This information is used to perform a search resulting in alternatives based on the criteria. The alternatives are then evaluated based on some evaluation strategies (e.g. weighted adding; elimination by aspect) of the consumer. As a result of the evaluation, a consumer may learn additional information that leads to the need to update the search criteria or update the alternatives' attributes being evaluated. There are three possible outcomes – updating search criteria and iterating search, giving up and stopping the search process, or proceeding forward with the final product selection and making a purchase. It should be noted that movement towards the left through an update will likely incur additional time and effort as the consumer updates the search criteria and performs the search again. However, in the following iteration and alternative evaluation, the consumer may have a set of alternatives that are of higher quality. Overall, our model highlights the increased iteration that occurs in online search as the effort and costs to perform these iterations are reduced by the IT moderated environment.

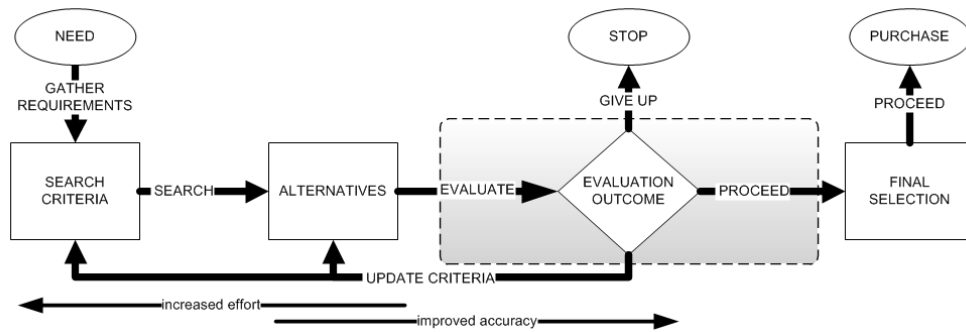


Figure 1: Iterative Model of Online Consumer Search Process

4 Alternative Evaluation and Iterative Search

Future research will fully investigate the entire process model. However, given the scope and the complexity of the proposed process model presented above, in the remainder of this paper we focus on the critical evaluation stage and the resulting search iteration (the shaded area in Figure 1).

In essence, we are interested in the factors that influence the consumer's decision to start a new iteration of search after she performs an evaluation of attributes. We posit that alternative evaluation is also a learning process, in which additional information prompts the consumer to update the attributes or the importance of the attributes, which is likely to trigger a new iteration of the search process. In addition, the relationship between the need for adjustment and the likelihood of performing search iteration is moderated by the fit between the product attributes and the consumer's consumption goal orientation. The theoretical model is represented in Figure 2.

Alternative Evaluation - Researchers have identified several goals such as maximized accuracy of the choice and minimized cognitive effort (Bettman et al. 1998). Although people intend to behave rationally, when the problem grows past the cognitive capacity, they tend to simplify the problem (Simon 1955). Hence, consumers often adopt various evaluation strategies (e.g., weighted adding strategy, elimination by aspect strategy) to make a choice among the alternatives. These strategies vary not only in their normative accuracy but also in the demands on consumers' cognitive capacity because these strategies involve varying amounts and types of information processed by consumers.

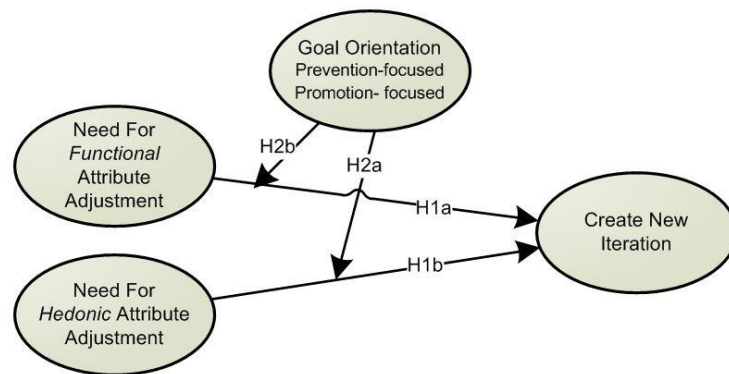


Figure 2: Iterative Search Research Model for the Evaluation Stage

Need to Adjust Attributes or Importance of Attributes - The assumptions implicit in these strategies are that the consumer has a clearly defined set of product attributes she is evaluating and has established the relative importance of these attributes (e.g., Peterson and Merino 2003). However, in many situations these assumptions may not be realistic because the consumer may not have the necessary knowledge to articulate the attributes and their importance at the beginning of her purchase process. Instead, as she selects and processes the information related to the alternatives and their attributes, the consumer is engaged in a learning process that enables her to gain more information about the products (Johnson and Russo 1984). As a result of learning, the consumer may adjust the product attributes being evaluated and/or their relative importance. In addition, these product attributes may be functional attributes or hedonic attributes. Representing the utilitarian and practical aspects of products, functional attributes provide consumers with instrumental value (e.g., Babin 1994, Batra and Ahtola 1990). Representing the aesthetic and hedonic aspects of products, hedonic attributes provide consumers with experiential affect and emotions (e.g., Holbrook and Hirschman 1982, Voss et al. 2003). We hypothesize that

H1a: When a consumer identifies the need to adjust functional product attributes or their importance, the consumer is more likely to conduct another iteration of search.

H1b: When a consumer identifies the need to adjust hedonic product attributes or their importance, the consumer is more likely to conduct another iteration of search.

Goal Orientation – Past research has found that consumers establish consumption goals prior to their purchase, which represents their expectations of usage and sets their motivations for the search process. According to the regulatory focus theory (e.g., Higgins 1997, 2000), people's goal orientations include prevention goals, which are goals that ought to be met in order to be safe, secure, and responsible, or promotion goals, which are goals that people aspire to meet for enjoyment, advancement and achievement. Marketing researchers have investigated the impact of promotion goals and prevention goals on consumer search behaviour (e.g., Chernev 2004, Chitturi et al. 2007). Based on the existing literature, we argue that the prevention-focused consumer is more likely to emphasize functional product attributes; the promotion-focused consumer is more likely to emphasize hedonic product attributes. Therefore, we hypothesize that

H2a: Given the needs to adjust functional product attributes or their importance, a prevention-focused consumer is more likely to conduct another iteration of search than a promotion-focused consumer.

H2b: Given the needs to adjust hedonic product attributes or their importance, a promotion-focused consumer is more likely to conduct another iteration of search than a prevention-focused consumer.

In addition, the relationship between the need to adjust attributes or attribute weights and search iteration is moderated by environmental factors such as search skill and time constraint, which will be controlled for when we empirically test the hypotheses stated above.

5 Discussion and Conclusion

In this paper, building upon the consumer behaviour literature and the information seeking literature, we propose a conceptual consumer search process model that highlights the iterative nature of search behaviour within the online environment. We then focus on the factors that contribute to the iterative nature of online consumer search and develop a theoretical framework, in which the learning experienced by the consumer during the evaluation stage enables the consumer to identify the need to update the attributes currently being evaluated based on their functional and/or hedonic importance. We hypothesize that the extent to which this need influences the likelihood of search iteration depends on the type of attributes and the consumer's goal orientation.

Theoretically, this research emphasizes the need to investigate the process of online consumer search, which has been either implicitly assumed to resemble that in the offline environment or has been treated as a black box in the existing consumer behaviour literature. Our research applies the findings from the information sciences literature on information seeking behaviour to the consumer behaviour context. Practically, this research represents a step toward capturing the multiplicity of paths a person may take to search for information in the pre-purchase context. This line of research has the potential to help online retailers identify the factors (e.g., utilitarian/hedonic product attributes, goal orientations, etc.) that trigger consumers' search iterations and manipulate these factors to convert site visitors to buyers more effectively – in essence, ending their search process with a purchase.

Future research will focus on the empirical validation of our proposed theoretical model. We also plan to examine the interplay between individual characteristics such as consumer knowledge and personality and situational characteristics in the iterative online consumer search process. Overall, we believe this research begins to open up the black box of consumer online search and forms the basis for further empirical examination.

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